
LABORATORY REPORT

November 14, 2011

Andy Limmer, P.G.
Aquaterra Environmental Solutions, Inc.
13 Executive Drive, Suite 1
Fairview Heights, IL 62208

RE: Cottonwood Hills 2011 Gas / 4733.10

Dear Andy:

Enclosed are the results of the samples submitted to our laboratory on November 1, 2011. For your reference, these analyses have been assigned our service request number P1104227.

All analyses were performed according to our laboratory's NELAP and DoD-ELAP-approved quality assurance program. The test results meet requirements of the current NELAP and DoD-ELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP and DoD-ELAP-accredited analytes, refer to the certifications section at www.caslab.com. Results are intended to be considered in their entirety and apply only to the samples analyzed and reported herein.

Columbia Analytical Services, Inc. is certified by the California Department of Health Services, NELAP Laboratory Certificate No. 02115CA; Arizona Department of Health Services, Certificate No. AZ0694; Florida Department of Health, NELAP Certification E871020; New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID #CA009; New York State Department of Health, NELAP NY Lab ID No: 11221; Oregon Environmental Laboratory Accreditation Program, NELAP ID: CA20007; The American Industrial Hygiene Association, Laboratory #101661; United States Department of Defense Environmental Laboratory Accreditation Program (DoD-ELAP), Certificate No. L10-3-R2; Pennsylvania Registration No. 68-03307; TX Commission of Environmental Quality, NELAP ID T104704413-11-2; Minnesota Department of Health, NELAP Certificate No. 219474; Washington State Department of Ecology, ELAP Lab ID: C946. Each of the certifications listed above have an explicit Scope of Accreditation that applies to specific matrices/methods/analytes; therefore, please contact me for information corresponding to a particular certification.

If you have any questions, please call me at (805) 526-7161.

Respectfully submitted,

Columbia Analytical Services, Inc.

Sue Anderson
Project Manager

Client: Aquaterra Environmental Solutions, Inc.
Project: Cottonwood Hills 2011 Gas / 4733.10

CAS Project No: P1104227

CASE NARRATIVE

The samples were received intact under chain of custody on November 1, 2011 and were stored in accordance with the analytical method requirements. Please refer to the sample acceptance check form for additional information. The results reported herein are applicable only to the condition of the samples at the time of sample receipt.

BTU and CHONS Analysis

The results for BTU and CHONS were generated according to ASTM D 3588-98. The following analyses were performed and used to calculate the BTU and CHONS results.

C2 through C6 Hydrocarbon Analysis

The samples were analyzed according to modified EPA Method TO-3 for C₂ through >C₆ hydrocarbons using a gas chromatograph equipped with a flame ionization detector (FID).

Fixed Gases Analysis

The samples were also analyzed for fixed gases (hydrogen, oxygen/argon, nitrogen, carbon monoxide, methane and carbon dioxide) according to ASTM D 1946 using a gas chromatograph equipped with a thermal conductivity detector (TCD).

Hydrogen Sulfide Analysis

The were also analyzed for hydrogen sulfide per ASTM D 5504-08 using a gas chromatograph equipped with a sulfur chemiluminescence detector (SCD).

Total Gaseous Non-Methane Organics as Methane Analysis

The samples were also analyzed for total gaseous non-methane organics as methane according to modified EPA Method 25C. The analyses included a single sample injection (method modification) analyzed by gas chromatography using flame ionization detection/total combustion analysis.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and Columbia Analytical Services, Inc. (CAS) is not responsible for utilization of less than the complete report.

Use of Columbia Analytical Services, Inc. (CAS) Name. Client shall not use CAS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to CAS any test result, tolerance or specification derived from CAS's data ("Attribution") without CAS's prior written consent, which may be withheld by CAS for any reason in its sole discretion. To request CAS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If CAS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use CAS's name or trademark in any Materials or Attribution shall be deemed denied. CAS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of CAS's name or trademark may cause CAS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

DETAIL SUMMARY REPORT

Client: Aquaterra Environmental Solutions, Inc.
Project ID: Cottonwood Hills 2011 Gas / 4733.10

Service Request: P1104227

Date Received: 11/1/2011
Time Received: 09:30

Client Sample ID	Lab Code	Matrix	Date Collected	Time Collected	Container ID	Pi1 (psig)	Pf1 (psig)	TO-3 Modified - C1C6+ Can	3C Modified - Fxd Gases Can	ASTM D5504-01 - H2S Can	25C Modified - TGNMO+ 1X Can
CW-4	P1104227-001	Air	10/26/2011	11:45	1SC00198	-1.94	5.44	X	X	X	X
CW-5	P1104227-002	Air	10/26/2011	12:25	1SC00067	-2.76	5.19	X	X	X	X
CW-6	P1104227-003	Air	10/26/2011	12:50	1SC00803	-2.17	5.20	X	X	X	X



2655 Park Center Drive, Suite A
Simi Valley, California 93065
Phone (805) 526-7161
Fax (805) 526-7270

Air - Chain of Custody Record & Analytical Service Request

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Simi Valley, California 93065 Phone (805) 526-7161 Fax (805) 526-7270						Requested Turnaround Time in Business Days (Surcharges) please circle 1 Day (100%) 2 Day (75%) 3 Day (50%) 4 Day (35%) 5 Day (25%) 10 Day-Standard						CAS Project No. P1104227		
Company Name & Address (Reporting Information) Aquatera Environmental Solutions						Project Name Cottonwood Hills 2011 GAS						CAS Contact:		Comments e.g. Actual Preservative or specific instructions
												Analysis Method		
Project Manager Andy Linner						Project Number 4733.10						Holding Volume ASTM D 5583	Total Nval EPA 25C 5 other gases EPA 3X	
Phone 618 628 2001		Fax 615 628 2002				P.O. # / Billing Information								
Email Address for Result Reporting alinner@aquatera-env.com						Sampler (Print & Sign) J. Jordan								
Client Sample ID		Laboratory ID Number	Date Collected	Time Collected	Canister ID (Bar code #- AC, SC, etc.)	Flow Controller ID (Bar code #- FC #)	Canister Start Pressure "Hg	Canister End Pressure "Hg/psig	Sample Volume					
CW-4			10/26	1145	1SC00198	AVG01709	-22	-3.5		X	X			
CW-5			10/26	1225	1SC00067	AVG01652	-28	-5		X	X			
CW-6			10/26	1250	1SC00803	AVG01678	-29.5	-5		X	X			
Report Tier Levels - please select												Project Requirements (MRLs, GAPP)		
Tier I - Results (Default if not specified) _____				Tier III (Results + QC & Calibration Summaries) _____				EDD required Yes / No						
Tier II (Results + QC Summaries) _____				Tier IV (Data Validation Package) 10% Surcharge _____				Type: _____						
Relinquished by: (Signature)		Date: 10/27/11	Time: 1940	Received by: (Signature)		Date: 11/01/11	Time: 0930							
Relinquished by: (Signature)		Date:	Time:	Received by: (Signature)		Date:	Time:	Cooler / Blank Temperature ____ °C						

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WM00931

Sample Acceptance Check Form

Client: Aquaterra Environmental Solutions, Inc. Work order: P1104227
 Project: Cottonwood Hills 2011 Gas / 4733.10
 Sample(s) received on: 11/1/11 Date opened: 11/1/11 by: SSTAPLES

Note: This form is used for all samples received by CAS. The use of this form for custody seals is strictly meant to indicate presence/absence and not as an indication of compliance or nonconformity. Thermal preservation and pH will only be evaluated either at the request of the client and/or as required by the method/SOP.

	Yes	No	N/A
1 Were sample containers properly marked with client sample ID?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 Container(s) supplied by CAS ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 Did sample containers arrive in good condition?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 Were chain-of-custody papers used and filled out?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 Did sample container labels and/or tags agree with custody papers?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 Was sample volume received adequate for analysis?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7 Are samples within specified holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8 Was proper temperature (thermal preservation) of cooler at receipt adhered to?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9 Was a trip blank received?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10 Were custody seals on outside of cooler/Box?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Location of seal(s)? _____ Sealing Lid?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were signature and date included?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were custody seals on outside of sample container?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Location of seal(s)? _____ Sealing Lid?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were signature and date included?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
11 Do containers have appropriate preservation , according to method/SOP or Client specified information?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is there a client indication that the submitted samples are pH preserved?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were VOA vials checked for presence/absence of air bubbles?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Does the client/method/SOP require that the analyst check the sample pH and <u>if necessary</u> alter it?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
12 Tubes: Are the tubes capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Do they contain moisture?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13 Badges: Are the badges properly capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are dual bed badges separated and individually capped and intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Lab Sample ID	Container Description	Required pH *	Received pH	Adjusted pH	VOA Headspace (Presence/Absence)	Receipt / Preservation Comments
P1104227-001.01	1.0 L Source Can					
P1104227-002.01	1.0 L Source Can					
P1104227-003.01	1.0 L Source Can					

Explain any discrepancies: (include lab sample ID numbers): _____

RESULTS OF ANALYSIS

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Client: Aquaterra Environmental Solutions, Inc.
Client Sample ID: CW-4
Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227
CAS Sample ID: P1104227-001

Test Code: ASTM D3588-98
Analyst: Dante Munoz-Castaneda/Laurn Keeler
Sampling Media: 1.0 L Summa Canister
Test Notes:
Container ID: 1SC00198

Date Collected: 10/26/11
Date Received: 11/1/11

Initial Pressure (psig): -1.94 **Final Pressure (psig):** 5.44

Canister Dilution Factor: 1.58

Components	Result	Result	Data Qualifier
	Volume %	Weight %	
Hydrogen	0.74	0.05	
Oxygen + Argon	1.69	1.94	
Nitrogen	12.12	12.21	
Carbon Monoxide	< 0.01	< 0.01	
Methane	49.41	28.51	
Carbon Dioxide	35.92	56.88	
Hydrogen Sulfide	< 0.01	< 0.01	
Ethane	< 0.01	< 0.01	
Propane	< 0.01	< 0.01	
Butanes	< 0.01	< 0.01	
Pentanes	< 0.01	0.03	
Hexanes	0.01	0.03	
> Hexanes	0.08	0.31	
TOTALS	99.99	99.99	

Components	Mole %	Weight %
Carbon	22.26	37.17
Hydrogen	52.00	7.29
Oxygen + Argon	19.47	43.32
Nitrogen	6.28	12.22
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		0.9597
Specific Volume	ft ³ /lb	13.65
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft ³	508.8
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft ³	458.1
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft ³	498.6
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft ³	448.9
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	6,946.4
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	6,254.8
Compressibility Factor "Z" (60 F, 14.696 psia)		0.9973

RESULTS OF ANALYSIS

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Client: Aquaterra Environmental Solutions, Inc.
Client Sample ID: CW-5
Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227
CAS Sample ID: P1104227-002

Test Code: ASTM D3588-98
Analyst: Dante Munoz-Castaneda/Laurn Keeler
Sampling Media: 1.0 L Summa Canister
Test Notes:
Container ID: 1SC00067

Date Collected: 10/26/11
Date Received: 11/1/11

Initial Pressure (psig): -2.76 **Final Pressure (psig):** 5.19

Canister Dilution Factor: 1.67

Components	Result	Result	Data Qualifier
	Volume %	Weight %	
Hydrogen	0.72	0.05	
Oxygen + Argon	1.76	2.03	
Nitrogen	12.27	12.34	
Carbon Monoxide	< 0.01	< 0.01	
Methane	49.25	28.37	
Carbon Dioxide	35.83	56.62	
Hydrogen Sulfide	< 0.01	< 0.01	
Ethane	< 0.01	< 0.01	
Propane	< 0.01	< 0.01	
Butanes	< 0.01	< 0.01	
Pentanes	< 0.01	0.03	
Hexanes	0.01	0.03	
> Hexanes	0.12	0.49	
TOTALS	99.99	99.99	

Components	Mole %	Weight %
Carbon	22.25	37.15
Hydrogen	51.96	7.28
Oxygen + Argon	19.44	43.22
Nitrogen	6.34	12.35
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		0.9614
Specific Volume	ft ³ /lb	13.63
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft ³	509.9
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft ³	459.2
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft ³	499.6
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft ³	450.0
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	6,949.1
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	6,258.3
Compressibility Factor "Z" (60 F, 14.696 psia)		0.9973

RESULTS OF ANALYSIS

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Client: Aquaterra Environmental Solutions, Inc.
Client Sample ID: CW-6
Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227
CAS Sample ID: P1104227-003

Test Code: ASTM D3588-98
Analyst: Dante Munoz-Castaneda/Lauryn Keeler
Sampling Media: 1.0 L Summa Canister
Test Notes:
Container ID: 1SC00803

Date Collected: 10/26/11
Date Received: 11/1/11

Initial Pressure (psig): -2.17 **Final Pressure (psig):** 5.20

Canister Dilution Factor: 1.59

Components	Result	Result	Data Qualifier
	Volume %	Weight %	
Hydrogen	0.73	0.05	
Oxygen + Argon	1.96	2.26	
Nitrogen	12.93	13.00	
Carbon Monoxide	< 0.01	< 0.01	
Methane	48.72	28.04	
Carbon Dioxide	35.48	56.03	
Hydrogen Sulfide	< 0.01	< 0.01	
Ethane	< 0.01	< 0.01	
Propane	< 0.01	< 0.01	
Butanes	< 0.01	< 0.01	
Pentanes	0.01	0.03	
Hexanes	0.01	0.04	
> Hexanes	0.13	0.53	
TOTALS	99.99	99.99	

Components	Mole %	Weight %
Carbon	22.14	36.77
Hydrogen	51.70	7.20
Oxygen + Argon	19.45	43.02
Nitrogen	6.72	13.01
Sulfur	< 0.10	< 0.10

Specific Gravity (Air = 1)		0.9623
Specific Volume	ft ³ /lb	13.62
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft ³	505.3
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/ft ³	455.1
Gross Heating Value (Water Saturated at 0.25636 psia)	BTU/ft ³	495.1
Net Heating Value (Water Saturated at 0.25636 psia)	BTU/ft ³	445.9
Gross Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	6,879.9
Net Heating Value (Dry Gas @ 60 F, 14.696 psia)	BTU/lb	6,196.3
Compressibility Factor "Z" (60 F, 14.696 psia)		0.9973

RESULTS OF ANALYSIS

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Client: Aquaterra Environmental Solutions, Inc.

Client Sample ID: CW-4

Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227

CAS Sample ID: P1104227-001

Test Code: EPA Method 3C Modified

Instrument ID: HP5890 II/GC1/TCD

Analyst: Dante Munoz-Castaneda

Sampling Media: 1.0 L Summa Canister

Test Notes:
Container ID: 1SC00198

Date Collected: 10/26/11

Date Received: 11/1/11

Date Analyzed: 11/3/11

Volume(s) Analyzed: 0.10 ml(s)

Initial Pressure (psig): -1.94

Final Pressure (psig): 5.44

Canister Dilution Factor: 1.58

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	0.741	0.16	
7782-44-7	Oxygen +			
7440-37-1	Argon	1.69	0.16	
7727-37-9	Nitrogen	12.1	0.16	
630-08-0	Carbon Monoxide	ND	0.16	
74-82-8	Methane	49.4	0.16	
124-38-9	Carbon Dioxide	35.9	0.16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

RESULTS OF ANALYSIS

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Client: Aquaterra Environmental Solutions, Inc.

Client Sample ID: CW-5

Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227

CAS Sample ID: P1104227-002

Test Code: EPA Method 3C Modified

Instrument ID: HP5890 II/GC1/TCD

Analyst: Dante Munoz-Castaneda

Sampling Media: 1.0 L Summa Canister

Test Notes:
Container ID: 1SC00067

Date Collected: 10/26/11

Date Received: 11/1/11

Date Analyzed: 11/3/11

Volume(s) Analyzed: 0.10 ml(s)

Initial Pressure (psig): -2.76

Final Pressure (psig): 5.19

Canister Dilution Factor: 1.67

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	0.721	0.17	
7782-44-7	Oxygen +			
7440-37-1	Argon	1.76	0.17	
7727-37-9	Nitrogen	12.3	0.17	
630-08-0	Carbon Monoxide	ND	0.17	
74-82-8	Methane	49.3	0.17	
124-38-9	Carbon Dioxide	35.8	0.17	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

RESULTS OF ANALYSIS

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Client: Aquaterra Environmental Solutions, Inc.

Client Sample ID: CW-6

Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227

CAS Sample ID: P1104227-003

Test Code: EPA Method 3C Modified

Instrument ID: HP5890 II/GC1/TCD

Analyst: Dante Munoz-Castaneda

Sampling Media: 1.0 L Summa Canister

Test Notes:
Container ID: 1SC00803

Date Collected: 10/26/11

Date Received: 11/1/11

Date Analyzed: 11/3/11

Volume(s) Analyzed: 0.10 ml(s)

Initial Pressure (psig): -2.17

Final Pressure (psig): 5.20

Canister Dilution Factor: 1.59

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	0.726	0.16	
7782-44-7	Oxygen +			
7440-37-1	Argon	1.96	0.16	
7727-37-9	Nitrogen	12.9	0.16	
630-08-0	Carbon Monoxide	ND	0.16	
74-82-8	Methane	48.7	0.16	
124-38-9	Carbon Dioxide	35.5	0.16	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

RESULTS OF ANALYSIS

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Client: Aquaterra Environmental Solutions, Inc.

Client Sample ID: Method Blank

Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227

CAS Sample ID: P111103-MB

Test Code: EPA Method 3C Modified

Instrument ID: HP5890 II/GC1/TCD

Analyst: Dante Munoz-Castaneda

Sampling Media: 1.0 L Summa Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 11/03/11

Volume(s) Analyzed: 0.10 ml(s)

CAS #	Compound	Result %, v/v	MRL %, v/v	Data Qualifier
1333-74-0	Hydrogen	ND	0.10	
7782-44-7	Oxygen +			
7440-37-1	Argon	ND	0.10	
7727-37-9	Nitrogen	ND	0.10	
630-08-0	Carbon Monoxide	ND	0.10	
74-82-8	Methane	ND	0.10	
124-38-9	Carbon Dioxide	ND	0.10	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

LABORATORY CONTROL SAMPLE SUMMARY

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Client: Aquaterra Environmental Solutions, Inc.

Client Sample ID: Lab Control Sample

Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227

CAS Sample ID: P111103-LCS

Test Code: EPA Method 3C Modified

Instrument ID: HP5890 II/GC1/TCD

Analyst: Dante Munoz-Castaneda

Sampling Media: 1.0 L Summa Canister

Test Notes:

Date Collected: NA

Date Received: NA

Date Analyzed: 11/03/11

Volume(s) Analyzed: NA ml(s)

CAS #	Compound	Spike Amount ppmV	Result ppmV	% Recovery	CAS Acceptance Limits	Data Qualifier
1333-74-0	Hydrogen	40,300	44,200	110	83-122	
7782-44-7	Oxygen +					
7440-37-1	Argon	50,000	51,600	103	74-132	
7727-37-9	Nitrogen	49,800	50,100	101	76-126	
630-08-0	Carbon Monoxide	49,900	55,000	110	84-113	
74-82-8	Methane	40,300	43,500	108	84-113	
124-38-9	Carbon Dioxide	50,000	53,800	108	87-117	

RESULTS OF ANALYSIS

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Client: Aquaterra Environmental Solutions, Inc.

Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227

Total Gaseous Nonmethane Organics (TGNMO) as Methane

Test Code: EPA Method 25C Modified

Instrument ID: HP5890 II/GC1/FID/TCA

Analyst: Dante Munoz-Castaneda

Sampling Media: 1.0 L Summa Canister(s)

Test Notes:

Date(s) Collected: 10/26/11

Date Received: 11/1/11

Date Analyzed: 11/4/11

Client Sample ID	CAS Sample ID	Canister Dilution Factor	Injection Volume ml(s)	Result ppmV	MRL ppmV	Data Qualifier
CW-4	P1104227-001	1.58	0.50	5,500	1.6	
CW-5	P1104227-002	1.67	0.50	5,800	1.7	
CW-6	P1104227-003	1.59	0.50	6,100	1.6	
Method Blank	P111104-MB	1.00	0.50	ND	1.0	

ND = Compound was analyzed for, but not detected above the laboratory reporting limit.

MRL = Method Reporting Limit - The minimum quantity of a target analyte that can be confidently determined by the referenced method.

LABORATORY CONTROL SAMPLE SUMMARY

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Client: Aquaterra Environmental Solutions, Inc.
Client Sample ID: Lab Control Sample
Client Project ID: Cottonwood Hills 2011 Gas / 4733.10

CAS Project ID: P1104227
CAS Sample ID: P111104-LCS

Test Code: EPA Method 25C Modified
Instrument ID: HP5890 II/GC1/FID/TCA
Analyst: Dante Munoz-Castaneda
Sampling Media: 1.0 L Summa Canister
Test Notes:

Date Collected: NA
Date Received: NA
Date Analyzed: 11/04/11
Volume(s) Analyzed: NA ml(s)

Compound	Spike Amount ppmV	Result ppmV	% Recovery	CAS	Data Qualifier
				Acceptance Limits	
Total Gaseous Nonmethane Organics (TGNMO) as Methane	98.8	98.3	99	71-136	